REMARKS

I. Status of the Application

Claims 1-13 are currently pending in the application. Claims 1-13 have been rejected. The present Reply addresses each point of rejection raised in the Office Action. Favorable reconsideration is respectfully requested.

II. Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1, 3, and 13 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Office Action states that the recital of "…the update substance data…have a non-tree index as a search key…" is not supported in the specification (emphasis in original). The Applicant respectfully disagrees.

Claim 1 recites that the update substance data "have a non-tree index as a search key that does not require any search tree data." The Office Action states that the non-tree index "is a negative limitation where the specification needs to explicitly disclose it" (Office Action, page 4). The Applicant respectfully disagrees. With regard to negative limitations, MPEP §2173.05(i) states that "[t]he current view of the courts is that there is nothing inherently ambiguous or uncertain about a negative limitation. So long as the boundaries of the patent protection sought are set forth definitely, albeit negatively, the claim complies with the requirements of 35 U.S.C. §112, second paragraph." The Applicant respectfully submits that the recited non-tree index clearly sets forth the boundaries of claim 1, by indicating that the index is not a tree index and does not require any search tree data.

Further, with regard to the lack of explicit disclosure of the non-tree index in the specification, MPEP § 2163 states that newly added claim limitations must be supported in

the specification through express, implicit, **or** inherent disclosure. In particular, MPEP §

2163.02 explains that the "subject matter of the claim need not be described literally (i.e.,

using the same terms or *in haec verba*) in order for the disclosure to satisfy the description

requirement" (emphasis added). Therefore, even though the term "non-tree index" is not

literally described in the specification, the Applicant respectfully submits that Fig. 4 and

paragraphs [0032]-[0033] of the specification provide ample support for the recited non-tree

index, as discussed in detail below.

Fig. 4 shows an example of the data format of the update data. In particular, Fig. 4

shows that "[e]ach set of update data includes information indicating an index 31, a category

32, a substance data name 33, a substance data position 34 and a version 35" (¶ [0032]).

Paragraph [0033] then explains that the update data "are generated in correspondence to each

set of substance data by adding an index to be used as a search key to the substance data"

(emphasis added). This clearly indicates that the update data shown in Fig. 4 are generated

by adding the index 31 to the substance data. This is also supported by paragraph [0057],

which explains that "[w]hen search data have been updated, only the updated substance data

are transmitted together with the corresponding index."

Fig. 4 clearly shows that the index 31 is an example of a non-tree index, as recited in

claim 1. As discussed in paragraph [0033], the update data are not stored or transmitted in a

format that includes a search tree. More specifically, the index 31 shown in Fig. 4 is an

example of "a non-tree index as a search key that does not require any search tree data." Fig.

4 shows that the index 31 is simply added to each piece of data. Neither the index 31 nor the

update data itself is stored in a format that includes a search tree. The Applicant respectfully

submits that the specification and figures provide the support for the non-tree index required

by 35 U.S.C. § 112, first paragraph. Therefore, the Applicant respectfully requests withdrawal of the rejection of claims 1, 3, and 13 as allegedly failing to comply with the written description requirement.

III.   Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-5 and 9-13 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Publication No. 2002/0013658 to Tanaka et al. ("Tanaka") in view of U.S. Patent No. 5,204,958 to Cheng et al. ("Cheng"), U.S. Patent No. 6,980,907 to Umezu et al ("Umezu"), and U.S. Patent No. 4,611,272 to Lomet. Claim 10 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tanaka, Cheng, Umezu, Lomet, and U.S. Publication No. 2003/0028316 to Miyahara et al. ("Miyahara"). Claims 6 and 7 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tanaka, Cheng, Umezu, Lomet, Miyahara, and U.S. Publication No. 2003/0140309 to Saito et al. ("Saito"). Claim 8 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tanaka, Cheng, Umezu, Lomet, and U.S. Application Publication No. 2003/0231163 to Hanon et al. ("Hanon"). The Applicant respectfully traverses these grounds of rejection.

The Applicant respectfully submits that none of the cited references, alone or in combination, teach or suggest executing "a substance data search by using a _tree-based search_ based on the search tree data of the initial search data _and_ an _index-based search_ using the non-tree index of the update substance data," as recited in claim 1 (emphasis added). For example, Tanaka discloses that both the original search data (shown in FIG. 7A) and the new search data (shown in FIG. 7B) have a tree structure. Therefore, as the Office Action acknowledges, Tanaka does not disclose update substance data that are provided without any search tree data, and have a non-tree index as a search key that does not require any search

tree data, as recited in claim 1. Further, Tanaka does not disclose using a non-tree index to execute an index-based search of the update substance data, as recited in claim 1.

In addition, Cheng fails to remedy the deficient teachings of Tanaka. Cheng discloses that when a new data record is received, it is stored in secondary memory in the sequential data file 130 (col. 6, lines 48-51). Once a number of records are stored in the sequential data file 130, a block of the records are read, and corresponding index pointers are created and temporarily stored in primary memory in the small B-tree (SBT) 148 (col. 6, lines 60-64). All of the indexed pointers for records in the sequential data file 130, except for those temporarily stored in another SBT 150, are stored in the large B-tree (LBT) 132 (col. 7, lines 6-9). Newly created index pointers are stored in the SBT 150 while the SBT 148 is being merged into the LBT 132 (col. 7, lines 38-41). When a matching operation is performed on the database, the system performs a matching range search of both the SBT 148 (and the SBT 150 if two SBT's are being used) and the LBT 132 (col. 10, lines 9-13).

However, Cheng does not teach or suggest executing "a substance data search by using a _tree-based search_ based on the search tree data of the initial search data _and_ an _index-based search_ using the non-tree index of the update substance data," as recited in claim 1 (emphasis added). Instead, Cheng performs the _same range search_ on the LBT 132 and the SBT 148, each of which has a tree structure. Cheng does not perform a _tree-based search_ on the LBT 132 _and_ an _index-based search_ on the SBT 148.

In rejecting claim 1, the Office Action maintains that the new data records of Cheng correspond to the recited update substance data. However, the range search disclosed in Cheng is performed on the SBT 148, which temporarily stores index pointers to the new data records stored in the sequential data file 130, and has a tree structure. Therefore, the range

search performed on the SBT 148 cannot be an index-based search using the non-tree index of the update substance data, as recited in claim 1.

Further, the Applicant submits that Umezu fails to remedy the deficient teachings of Tanaka and Cheng. Umezu discloses a map data processing unit that is capable of updating map data (col. 1, lines 44-48). However, Umezu does not disclose *search* data. Therefore, Umezu does not disclose update search data comprising update substance data, as recited in claim 1. More specifically, Umezu does not disclose update substance data that are provided without any search tree data and have a non-tree index as a search key that does not require any search tree data.

Umezu discloses a batch update method and a dynamic update method for updating the map data (col. 4, line 60 – col. 5, line 19). In both methods the map data are updated by using update data having the same format as the map data (col. 5, line 56 – col. 6, line 2). Therefore, Umezu fails to teach or suggest executing "a substance data search by using a *tree-based search* based on the search tree data of the initial search data *and* an *index-based search* using the non-tree index of the update substance data," as recited in claim 1 (emphasis added). Specifically, Umezu fails to teach or suggest executing a tree-based search of initial substance data, and also executing a separate index-based search of update substance data. Umezu is not cited as allegedly disclosing these features.

In addition, the Applicant submits that Lomet fails to remedy the deficient teachings of Tanaka, Cheng, and Umezu. Lomet discloses a key accessed (indexed) file in which the file structure consists of only two levels, an index level and a data level (col. 3, lines 3-5). A search may be performed to find data associated with a particular key (col. 7, lines 4-6). However, Lomet fails to teach or suggest executing "a substance data search by using a *tree-*

based search based on the search tree data of the initial search data *and* an *index-based*

search using the non-tree index of the update substance data," as recited in claim 1 (emphasis

added). Instead, only one data search method is disclosed (the key search).

In rejecting claim 1, the Office Action maintains that Lomet discloses the recited non-

tree index at col. 13, lines 26-34. The Applicant respectfully disagrees. This passage merely

describes a disk storage management method that allocates a "buddy" for each storage block

(col. 12, lines 53-55). Lomet maintains a free list for each size of available storage blocks,

and searches the free list with the appropriate size blocks (col. 13, lines 24-28). Lomet

discloses that either a sequential search or a binary digital tree search can be used to search

the free list (col. 13, lines 28-31). However, this free list is unrelated to the recited initial

substance data and the update substance data. This free list is also unrelated to the structure

of the key accessed file of Lomet described above.

The Applicant submits that claim 1 is patentable over Tanaka, Cheng, Umezu, and

Lomet for at least the reasons discussed above, as well as its additionally recited features.

Because independent claims 3 and 13 recite features similar to those discussed above with

regard to claim 1, the Applicant submits that claims 3 and 13 are patentable over Tanaka,

Cheng, Umezu, and Lomet at least for similar reasons, as well as their additionally recited

features. Further, claims 2, 4, 5, 9, 11, and 12 are patentable over Tanaka, Cheng, Umezu,

and Lomet at least by virtue of their respective dependencies on claims 1 and 3, as well as

their additionally recited features.

Further, Miyahara, Saito, and Hanon fail to remedy the deficient teachings of Tanaka,

Cheng, Umezu, and Lomet, and are not cited as allegedly disclosing the features discussed

above. Therefore, claim 10 is patentable over Tanaka, Cheng, Umezu, Lomet, and Miyahara

at least by virtue of its dependency on claim 3, as well as its additionally recited features.

Claims 6 and 7 are patentable over Tanaka, Cheng, Umezu, Lomet, Miyahara, and Saito at

least by virtue of their dependencies on claim 3, as well as their additionally recited features.

Further, claim 8 is patentable over Tanaka, Cheng, Umezu, Lomet, and Hanon at least by

virtue of its dependency on claim 3, as well as its additionally recited features.

IV. Conclusion

If there are any questions regarding this Reply or the application in general, a

telephone call to the undersigned would be appreciated since this should expedite the

prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition

for an Extension of Time sufficient to effect a timely response, and please charge any

deficiency in fees or credit any overpayments to Deposit Account No. 05-1323, Docket No.

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Respectfully submitted,

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/Suzanne C. Walts/

Jeffrey D. Sanok
Registration No. 32,169

Suzanne C. Walts
Registration No. 60,831

CROWELL & MORING LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
JDS/SCW:gs